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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/913,494	08/16/2001	Winfried Linxweiler	MERCK 2289	2518

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EXAMINER
PAK, YONG D

ART UNIT	PAPER NUMBER
1652	11

DATE MAILED: 05/06/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/913,494	LINXWEILER ET AL.	
	Examiner	Art Unit	
	Yong Pak	1652	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *22 April 2003* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-17* is/are pending in the application.

4a) Of the above claim(s) *4-17* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

This application is a 371 of PCT/EP00/00978.

Claims 1-17 are pending.

Election/Restrictions

Applicant's election with traverse of Group I (claims 1-3) in Paper No. 10 is acknowledged. The traversal is on the ground(s) that Groups I-IV have unity of invention. This is not found persuasive because, as stated in the Restriction Requirement, Sakhamuru et al. (from PTO-892) teach a recombinant fusion protein comprising of a glucose dehydrogenase. Therefore, the technical feature linking the inventions of Groups I-V does not constitute a special technical feature as defined by PCT Rule 13.2, as it does not define a contribution over the prior art.

Applicants also aruge that a search of the compounds of Group I-IV would not represent a serious search burden for the office. This is not found persuasive because searches are required for the examination of Groups II-IV that is not required for the examination of Group I.

The requirement is still deemed proper and is therefore made FINAL.

Claims 4-17 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected invention, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in Paper No. 10.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claim 2 is rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Claim 2 is drawn to protein or polypeptide fragments or portions thereof. Therefore, these claims are drawn to a genus of protein/polypeptide fragments or portions, with any structure and unknown function or no function.

The specification does not contain any disclosure of the structure and function of all protein/polypeptide fragments or portions thereof. Therefore, many structurally and functionally unrelated polypeptides are encompassed within the scope of the claim. The specification fails to provide any structure: function correlation present in all members of the claimed genus.

Therefore, the specification is insufficient to put one of skill in the art in possession of the attributes and features of all species within the claimed genus. Therefore, one skilled in the art cannot reasonably conclude that the applicant had possession of the claimed invention at the time the instant application was filed.

Claim 2 is rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for a fusion protein comprising a glucose dehydrogenase and a recombinant protein/polypeptide, does not reasonably provide enablement for a fusion protein comprising a glucose dehydrogenase and a polypeptide of unknown structure and function. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, how to make the invention commensurate in scope with these claims.

Factors to be in In re Wands 858 F.2d 731, 8 USPQ2nd 1400 (Fed. Cir, 1988). They include (1) the quantity of experimentation necessary, (2) the amount of direction or guidance presented, (3) the presence or absence of working examples, (4) the nature of the invention, (5) the state of the prior art, (6) the relative skill of those in the art, (7)considered in determining whether undue experimentation is required, are summarized the predictability or unpredictability of the art, and (8) the breadth of the claims.

The claims are drawn to protein/polypeptide fragments or portions thereof having unlimited structure and having unknown activity or no activity. The scope of the claims is not commensurate with the enablement provided by the disclosure with regard to the extremely large number of constructs broadly encompassed by the claims. Therefore, the breadth of these claims is much larger than the scope enable by the specification.

The amino acid sequence determines the structural and functional properties of an enzyme. Knowledge of which sequences can be altered or removed and still result in similar protein activity is well outside the realm of routine experimentation. The function of a polypeptide cannot be predicted from its structure and the specification does not teach how to use polypeptides with unknown function. While recombinant and

mutagenesis techniques are known, it is not routine in the art to screen a large number of possible combinations.

Therefore, one of ordinary skill would require guidance in order to make fusion proteins comprising a glucose dehydrogenase and fragments/portions of a protein/polypeptide in a manner reasonable correlated with the scope of the claims. Without such guidance, the experimentation left to those skilled in the art is undue.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-3 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claims 1-3, the phrase "biological activity" is unclear because the claim can refer to many polypeptides with different biological activities. Therefore, the scope of the polypeptides in claims 1-3 is unclear.

In claim 2, the phrase "polypeptide X" is vague because a "polypeptide X" has no clear meaning.

Claim Rejections - 35 USC § 102

> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

> (e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

Claims 1-2 are rejected under 35 U.S.C. 102(b) as being anticipated by Sakhamuru et al.

Sakhamuru et al. (form PTO-892 of Restriction Requirement) teach a fusion protein comprising a glucose dehydrogenase and a beta-galactosidase (see abstract). Therefore, the teaching of Sakhamuru et al. anticipates claims 1-2.

Claims 1-2 are rejected under 35 U.S.C. 102(b) as being anticipated by Yamada et al.

Yamada et al. (form PTO-892) teach a fusion protein comprising a glucose dehydrogenase and an alkaline phosphatase or beta-galactosidase (see abstract and page 12812, left column). Therefore, the teaching of Sakhamuru et al. anticipates claims 1-2.

Claims 1-2 are rejected under 35 U.S.C. 102(e) as being anticipated by Nicols et al.

Nichols et al. (U.S. Patent 6,399,859 - form PTO-892) teach a fusion protein comprising a glucose dehydrogenase and additional amino acid sequences such as a transit peptide joined to the glucose dehydrogenase (Column 7, lines 15-27). Nichols et al. teach the transit peptides enable the translocation of a nuclear encoded polypeptide into the chloroplast or the mitochondria, the lumen of the endoplasmatic reticulum or other cellular compartment (Column 20, line 47 through Column 21, line 39). Therefore, the teaching of Nichols et al. anticipates claims 1-2.

Claims 1-2 are rejected under 35 U.S.C. 102(b) as being anticipated by Nichols et al.

Applicant cannot rely upon the foreign priority papers to overcome this rejection because a translation of said papers has not been made of record in accordance with 37 CFR 1.55. See MPEP § 201.15.

Nichols et al. (WO 99/29875- form PTO-892) teach a fusion protein comprising a glucose dehydrogenase and additional amino acid sequences such as a transit peptide joined to the glucose dehydrogenase (page 11, lines 5-13). Nichols et al. teach the transit peptides enable the translocation of a nuclear encoded polypeptide into the chloroplast or the mitochondria, the lumen of the endoplasmatic reticulum or other cellular compartment (page 32, line 27-page 34 line 9). Therefore, the teaching of Nichols et al. anticipates claims 1-2.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nichols et al. in view of Sakhamuru et al.

Nichols et al. (U.S. Patent No. 6,399,859) teach a fusion protein comprising a glucose dehydrogenase and a transit peptide joined to the glucose dehydrogenase, as discussed above.

The difference between the reference of Nichols et al. and the instant invention is that the reference of Nichols et al. does not teach a fusion protein further comprising a recognition sequence or a tag suitable for detection.

Sakhamuru et al. teach that a beta-galactosidase tag sequence can be used to enable recovery of fusion proteins, purifying the protein on the basis of molecular weight using ultrafiltration membranes (abstract).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the claimed invention was made to make add the beta-galactosidase tag sequence to the fusion protein of Nichols et al. The motivation of adding the beta-galactosidase tag is to enable detection of the fusion protein in order to purify the protein in high yield and purity. One of ordinary skill in the art would have had a reasonable expectation of success since Sakhamuru et al. teach that employment of the beta-galactosidase tag in a fusion protein results in a high yield and purity of the protein.

Claims 1-3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nichols et al. in view of Sakhamuru et al.

Nichols et al. (WO 99/29875) teach a fusion protein comprising a glucose dehydrogenase and a transit peptide joined to the glucose dehydrogenase, as discussed above.

The difference between the reference of Nichols et al. and the instant invention is that the reference of Nichols et al. does not teach a fusion protein further comprising a recognition sequence or a tag suitable for detection.

Sakhamuru et al. teach that a beta-galactosidase tag sequence can be used to enable recovery of fusion proteins, purifying the protein on the basis of molecular weight using ultrafiltration membranes (abstract).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the claimed invention was made to make add the beta-galactosidase tag sequence to the fusion protein of Nichols et al. The motivation of adding the beta-galactosidase tag is to enable detection of the fusion protein in order to purify the protein in high yield and purity. One of ordinary skill in the art would have had a reasonable expectation of success since Sakhamuru et al. teach that employment of the beta-galactosidase tag in a fusion protein results in a high yield and purity of the protein.

Claims 1-3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamada et al. in view of Sakhamuru et al.

Yamada et al. teach a fusion protein comprising a glucose dehydrogenase and a transit peptide joined to the glucose dehydrogenase, as discussed above.

The difference between the reference of Nichols et al. and the instant invention is that the reference of Yamada et al. does not teach a fusion protein further comprising a recognition sequence or a tag suitable for detection.

Sakhamuru et al. teach that a beta-galactosidase tag sequence can be used to enable recovery of fusion proteins, purifying the protein on the basis of molecular weight using ultrafiltration membranes (abstract).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the claimed invention was made to make add the beta-galactosidase tag sequence to the fusion protein of Yamada et al. The motivation of adding the beta-galactosidase tag is to enable detection of the fusion protein in order to purify the protein in high yield and purity. One of ordinary skill in the art would have had a reasonable expectation of success since Sakhamuru et al. teach that employment of the beta-galactosidase tag in a fusion protein results in a high yield and purity of the protein.

No claims are allowed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Yong Pak whose telephone number is 703-308-9363. The examiner can normally be reached on 8:00 A.M. to 4:30 P.M weekdays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ponnathapu Achutamurthy can be reached on 703-308-3804. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9306 for regular communications and 703-872-9307 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0196.

Yong Pak
Patent Examiner

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